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EXAMINER	
LEE, PING	

ART UNIT	PAPER NUMBER
2614	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/531,632	SEO ET AL.	
	Examiner	Art Unit	
	Ping Lee	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Potard et al. (hereafter Potard) ("Using XML Schemas to Create and Encode Interactive 3-D Audio Scenes for Multimedia and Virtual Reality Applications") in view of Pihkala et al. (hereafter Pihkala) ("Proceedings of the 2003 International Conference on Auditory Display").

The similarities between the claimed invention specified in claims 1, 5 and 9 compared with Potard will be discussed first. Their differences will be addressed immediately follow.

Regarding claims 1 and 9, Potard discloses a method and a data stream for generating a three-dimensional audio scene (see title) with a sound source whose spatiality is extended (as discussed under "Introduction", a complex object is usually made of several individual sound objects; for example, in order to simulate a choir, a singer object is duplicated many times with a position change, each singer object represents a single singer; see section 2.3.1; the locations of the plurality of singer objects represent how the spatiality is extended), comprising the steps of:

a) generating a sound object (the choir) composing the audio scene (for example, as illustrated in Fig. 5); and

b) generating three-dimensional audio scene description information (see Table 1, several objects in the scene are defined by their corresponding parameters) including sound source characteristics information for the sound object (e.g., describing the environment and the choir based on each singer object; see section 2.3.1), the three-dimensional audio scene description information including a plurality of point sound sources (multiple duplicated singer objects) that model the sound source (the choir),

wherein the sound source characteristics information includes spatiality extension information of the sound source, said spatiality extension information enabling the sound source to include more than one dimension, and includes the size (how many times that the singer object is being duplicated) and shape of the sound source expressed in a three-dimensional space(e.g., the layout of the choir).

Regarding claim 5, Potard discloses a method for consuming a three-dimensional audio scene (see title) with a sound source whose spatiality is extended (as discussed under "Introduction", a complex object is usually made of several individual sound objects; for example, in order to simulate a choir, a singer object is duplicated many times with a position change, each singer object represents a single singer; see section 2.3.1), comprising the steps of:

a) receiving (through WEB for example with full description of sound scenes; see section 1) a sound object composing the audio scene and three-dimensional audio scene description information (see Table 1, many objects in the scene are defined by their corresponding parameters) including sound source characteristics information for

the sound object (see section 3.1), the three-dimensional audio scene description information including a plurality of point sound sources that model the sound source (under "Introduction", several individual sound objects model the macro-object; if choir is the claimed sound source, then the plurality of duplicated singer objects are the point sound sources); and

b) outputting the sound object based on the three-dimensional audio scene description information ("3-D Sound" in Fig. 6),

wherein the sound source characteristics information includes spatiality extension information, said spatiality extension information enabling the sound source to include more than one dimension, and includes the size and shape of the sound source expressed in a three-dimensional space (see rejection for claim 1). The sound object (e.g. choir) includes a plurality of point sound source (plurality of duplicated singer objects).

Potard fails to show that the size of the sound source is determined by a difference of coordinates in the three-dimensional space from a center of the sound source represented by the spatiality extension information as specified in claims 1, 5 and 9. Potard teaches that the size and shape of the sound source would be defined by parameters, but fails to explicitly teach how to do so in terms of using the coordinates. Pihkala teaches that the size of the sound source could be determined by a difference of coordinates ("by adding front, back and depth attributes" in sect. 3.1) in the three-dimensional space from a center of the sound source represented by the spatiality extension information. Thus, it would have been obvious to one of ordinary skill in the

art to modify Potard in view of Pihkala by defining the size of the sound source based on the difference of the coordinates in order to provide a way to define the sound source having three dimensions.

Potard also fails to explicitly show that the plurality of point sound sources are located on a surface defined by the three-dimensional space. Potard teaches how to define a macro-object (e.g., the choir) by grouping several point sound sources (a singer object), cloning the same point sound source or so on (see section 2.3.1). The specific examples provided by Potard are a choir (Fig. 1) and an automobile ("Introduction"). Comparing with the claimed language, the claimed sound object reads on the choir, and the plurality of point sound sources read on many cloned singer objects. Potard suggests that one can also define other macro objects, such as a Jazz Band, a speaker or a crowd, as well. One skilled in the art could see that each of the suggested complex sound sources has its own unique shape and size occupied in a three-dimensional space. Potard implies that a complex sound source with specific dimension occupied in three-dimensional space could be defined by several cloned point sound sources. A complex sound source defined by a plurality of point sound sources (multiple cloned sound sources) located on a surface is just a specific type of complex sound source. Potard even teaches "using one 'splash' sound repeated many times over a surface" in section 2.3.1. By providing each cloned point sound source with a position change, the locations of the point sound sources at the boundaries inherently provide information on the size and shape of the sound source.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Potard and Pihkala to define a specific complex sound source, including the one made by a plurality of point sound sources located on a surface defined by the three-dimensional space because it was considered as a matter of preference to create a specific type of complex sound source, including one with a plurality of point sound sources located on a surface, for the audio scene.

Regarding claims 2, 3, 6, 7, 10, 11 and 13-15, Potard discloses that the spatiality extension information of the sound source includes sound source dimension information that is expressed as three components of a set of three-dimensional coordinates (section 2.5.2) with a geometrical center location information (original location).

Regarding claims 4, 8 and 12, Potard discloses that the spatiality extension information of the sound source further includes direction information of the sound source (for example the directivity of the macro-object defining choir) and describes a three-dimensional audio scene by extending the spatiality of the sound source in a direction vertical to the direction of the sound source (by duplicating macro-object in a direction vertical to the direction of the directivity of the macro-object defining choir).

Response to Arguments

3. Applicant's arguments filed 2/23/09 have been fully considered but they are not persuasive.

Applicant argued that Potard fails to teach or suggest the elements of "the sound object including the plurality of point sound sources". This is not persuasive. Potard

clearly teaches (see 2.3) that a macro-object, such as a moving car or a choir (read on claimed a sound object), could be modeled by a plurality of children objects (reads on the claimed point sound sources), such as tires and exhaust for a moving car and singer objects for a choir. As discussed in the office action, placing the point sound sources on the surface defined by the three-dimensional space is just a specific type of macro-object being modeled. On sect. 2.3.1, Potard gives an example for modeling this kind of sound source. In order to simulate the swimming pool atmosphere, the plurality of point sound sources are located on a surface by "using one 'splash' sound repeated many times over a surface". Potard's method of defining a macro-object reduces the amount of objects required to model a single sound source. Applicant alleged that Potard uses multiple elementary and/or macro-objects to model a particular sound source. First of all, multiple elementary and/pr macro-objects read on the claimed plurality of point sound sources. Also, applicant's disclosed invention as shown in Fig. 2 requires definition to separately define each and every multiple point sound sources. It does not appear that applicant's invention is different from Potard in view of Pihkala.

Applicant attacked Pihkala by stating that Pihkala only shows a single sound source. This is not persuasive. The rejection is based on Potard in view of Pihkala, not Pihkala alone. It is a common knowledge that the location of a first source could be defined by coordinates (x,y,z), another source could be defined by coordinates (x_2,y_2,z_2) or the coordinates of the first source is being treated as the reference point, so the another source can be defined by adding or subtracting the difference to the coordinates of the first source. This is basic mathematic taught in middle or high school

for students learning about the graph using x-y-z coordinates. The concept can be applied to real life. Pihkala teaches that one can define how the sound source is extended by adding the difference to the original coordinates. So, Pihkala teaches how to determine the size of the sound source by a difference of coordinates in the three-dimensional space from a center of the sound source represented by the spatiality extension information.

Terminal Disclaimer

4. The terminal disclaimer filed on 2/23/09 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted on Application Number 11/796,808 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Lee whose telephone number is 571-272-7522. The examiner can normally be reached on Wednesday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ping Lee/
Primary Examiner, Art Unit 2614

pwl